ECONOMIC EVALUATION OF EGFR-GUIDED TREATMENT IN ADVANCED REFRACTORY NON SMALL-CELL LUNG CANCER

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OBJECTIVE: To evaluate the clinical, cost, and value implications of using epidermal growth factor receptor (EGFR) testing to guide treatment of refractory non-small cell lung cancer (NSCLC) patients compared to standard empirical treatments.

METHODS: We developed a decision analytic model to evaluate the cost-utility of using EGFR protein expression or EGFR gene copy number testing compared to standard treatments (erlotinib, docetaxel, or pemetrexed) in refractory advanced NSCLC patients using the societal perspective and a two-year time frame. Survival, cost, and utility inputs were obtained from publicly available sources. We evaluated the uncertainty in the model using one-way and probabilistic sensitivity analyses as well as an expected value of perfect information (EVPI) analysis.

RESULTS: In the base case, the lifetime QALY estimates ranged from 0.431 for docetaxel to 0.502 for gene copy number testing with pemetrexed for those testing negative (GC/DOC). Lifetime cost estimates ranged from $57,200 for erlotinib to $71,800 for pemetrexed. After removing dominated interventions, erlotinib dominated docetaxel, gene copy number testing with docetaxel for those testing negative (GC/DOC) had an ICER of $162,018/QALY versus erlotinib, and GC/PEM had an ICER of $2,487,867/QALY versus GC/DOC. The model results were most sensitive to overall survival, progression-free survival, health state utilities, and drug acquisition cost inputs. In the probabilistic sensitivity analyses, GC/DOC had a 14% probability of decreasing costs and an 83% probability of increasing QALYs versus Erlotinib. The discounted EVPI at a $100,000/QALY threshold was $38.1 million dollars and represents the upper limit value of additional information. CONCLUSION: The results of our analysis suggest treatment of refractory NSCLC using a pharmacogenomic test based on gene copy number has the potential to improve average QALYs at considerable additional costs. The large EVPI suggests that additional research in this area is likely warranted.

COMPARISON OF THE COST-EFFECTIVENESS OF SIX CYCLES OF TAXOTERE, DOXORUBICIN, CYCLOPHOSPHAMIDE (TAC) VERSUS SIX CYCLES OF FLUOROURACIL, DOXORUBICIN, CYCLOPHOSPHAMIDE (FAC) IN THE ADJUVANT SETTING OF NODE POSITIVE BREAST CANCER WITH PRIMARY AND SECONDARY G-CSF PROPHYLAXIS

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COSTS ASSOCIATED WITH NEUTROPENIA IN ELDERLY PATIENTS TREATED FIRST-LINE FOR ADVANCED NON-SMALL CELL LUNG CANCER (NSCLC)

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OBJECTIVE: Neutropenia is a major adverse event often associated with chemotherapy administration. The purpose of this study was to evaluate costs for chemotherapy-related neutropenia (N) and febrile neutropenia (FN) in an elderly population with advanced NSCLC. METHODS: Study patients included those aged 65 years and older with a diagnosis of Stage III/IV NSCLC in the SEER cancer registry from 1998 through 2002. Neutropenia patients were followed in the SEER-Medicare database to evaluate the costs associated with N and FN. Neutropenia was identified by the presence of a primary or secondary ICD-9-CM 288.x diagnostic code during a period of chemotherapy treatment. FN was defined by an inpatient hospitalization for neutropenia or antibiotic administration following the initial neutropenia diagnosis. All Medicare payments were summed for two main types of cost measures: neutropenia-related costs and costs unrelated to neutropenia. Costs were classified using ICD-9-CM diagnosis and procedure codes appearing on the claims, with confidence intervals for all cost measures estimated by using non-parametric bootstrapping techniques. RESULTS: Among elderly patients treated first-line for advanced NSCLC, 5138 were identified who met inclusion criteria. Nearly one-quarter (N = 1228) developed N or FN while on first-line chemotherapy. Mean first-line neutropenia-related costs for FN were $11,661 (95% CI: 10,493–13,098) compared to $2817 (95% CI: 2522–3124) for N, with length of follow-up of 134 and 165 days respectively. Costs related to neutropenia for FN patients accounted for 31% of total first-line costs compared to only 8% for N. Neutropenia-related costs during first-line were $2000 higher per month for FN when compared to N. Costs unrelated to neutropenia were comparable between N and FN when adjusted for variable follow-up. CONCLUSION: Neutropenia, and in particular FN, add additional costs to first-line chemotherapy treatment in elderly advanced NSCLC patients.